

IN THE CLAIMS

1. (Currently Amended) A circuit comprising:
a plurality of switches coupled to a plurality of registers, the plurality of registers to control the plurality of switches, and
a universal serial bus (USB) host controller coupled to said plurality of switches,
said USB host controller having a plurality of root hubs;

wherein the plurality of switches are dynamically switched to route pairs of a
plurality of ~~universal serial bus (USB)~~ ports to one of said plurality of root hubs based
on a USB device bandwidth balancing process to maximize USB device bandwidth.

2. (Currently Amended) The circuit of claim 1, wherein the USB device
balancing process balances USB bandwidth load by pairing USB ports to a root hub
based on USB device class.

3. (Original) The circuit of claim 2, wherein the USB device class is
determined from a USB device descriptor.

4. (Currently Amended) The circuit of claim 1, wherein the USB device
balancing process to balance USB bandwidth load by pairing USB ports to a root hub
based on USB device usage information and bandwidth consumption information.

5. The circuit of claim 1, wherein a plurality of USB signals are routed
through the plurality of switches to the plurality of USB ports dynamically.

6. (Currently Amended) A system comprising:
a processor;
a memory coupled to the processor;
a north bridge coupled to a bus and the processor;
a south bridge coupled to the bus, said south bridge including a universal serial
bus (USB) host controller having a plurality of root hubs; and
a ~~universal serial bus (USB)~~ bandwidth load balancing circuit coupled to said
south bridge,

wherein the USB bandwidth load balancing circuit dynamically distributes pairs of a plurality of USB ports each to one of said plurality of root hubs based on a USB device bandwidth balancing process to maximize USB device bandwidth.

7. (Original) The system of claim 6, wherein the USB bandwidth load balancing circuit comprises:

a plurality of switches coupled to a plurality of registers, the plurality of registers to control the plurality of switches, wherein the plurality of switches are coupled to a plurality of universal serial bus (USB) ports based on a USB device bandwidth balancing process.

8. (Original) The system of claim 7, wherein the USB device balancing process to balance USB bandwidth load by pairing USB ports to a root hub based on USB device class.

9. (Original) The system of claim 8, wherein the USB device class is determined from a USB device descriptor.

10. (Original) The system of claim 7, wherein the USB device balancing process to balance USB bandwidth load by pairing USB ports to a root hub based on USB device ~~use~~-usage information and bandwidth consumption information.

11. (Original) The system of claim 7, wherein a plurality of USB signals are routed through the plurality of switches to the plurality of USB ports dynamically.

Claim 12 (Cancelled)

13. (Currently Amended) A method comprising:
determining allocation of a plurality of USB root hubs; and
switching a plurality of USB root hub USB device assignments dynamically to distribute pairs of a plurality of USB ports each to one of a plurality of USB root hubs based on a USB device bandwidth balancing process to maximize USB device bandwidth.

14. (Original) The method of claim 13, further comprising:
reading a USB descriptor for a USB device; and
writing a plurality of USB root hub allocation information to a plurality of registers coupled to a USB bandwidth load balancing circuit.

15. (Original) The method of claim 14, wherein the USB bandwidth load balancing circuit comprises:

a plurality of switches coupled to the plurality of registers, the plurality of registers to control the plurality of switches, wherein the plurality of switches are coupled to a plurality of USB ports based on a USB device bandwidth balancing process.

16. (Original) The method of claim 15, further comprising:
determining an attached USB device's class;
distinguishing USB device classes;
allowing at least two low bandwidth USB class devices to couple to a same USB root hub;

allowing at least one low bandwidth USB class device and at least one high bandwidth USB class device to couple to a same root hub; and

preventing a first high bandwidth USB class device and a second high bandwidth USB class device to couple to a same USB root hub.

17. (Original) The method of claim 16, wherein USB device classes are determined from a USB device descriptor.

18. (Original) The method of claim 16, wherein switching the plurality of USB root hub USB device assignments is dynamic.

19. (Original) The method of claim 15, further comprising monitoring each of an attached USB device's use and USB bandwidth consumption, wherein the USB device balancing process to balance USB bandwidth load by the USB device's use information and bandwidth consumption information.

20. (Original) The method of claim 19, wherein switching USB root hub USB device assignments is dynamic.

21. (Currently Amended) A program storage device readable by a machine comprising instructions that cause the machine to:
determine allocation of a plurality of USB root hubs; and
switching a plurality of USB root hub USB device assignments dynamically to distribute pairs of a plurality of USB ports each to one of a plurality of USB root hubs based on a USB device bandwidth balancing process to maximize USB device bandwidth.

22. (Original) The program storage device of claim 21, further comprising instructions that cause the machine to:
read a USB descriptor for a USB device; and
write a plurality of USB root hub allocation information to a plurality of registers coupled to a USB bandwidth load balancing circuit.

23. (Original) The program storage device of claim 22, wherein the USB bandwidth load balancing circuit comprises:
a plurality of switches coupled to the plurality of registers, the plurality of registers to control the plurality of switches, wherein the plurality of switches are coupled to a plurality of USB ports based on a USB device bandwidth balancing process.

24. (Original) The program storage device of claim 23, further comprising instructions that cause the machine to:
determine an attached USB device's class;
distinguish USB device classes;
allow at least two low bandwidth USB class devices to couple to a same USB root hub;
allow at least one low bandwidth USB class device and at least one high bandwidth USB class device to couple to a same root hub; and

prevent a first high bandwidth USB class device and a second high bandwidth USB class device to couple to a same USB root hub.

25. (Original) The program storage device of claim 24, wherein USB device classes are determined from a USB device descriptor.

26. (Original) The program storage device of claim 24, wherein switching USB root hub USB device assignments is dynamic.

27. (Original) The program storage device of claim 23, further comprising instructions that cause the machine to:

monitor each of an attached USB device's use and USB bandwidth consumption, wherein the USB device balancing process to balance USB bandwidth load by the USB device's use information and bandwidth consumption information.

28. (Original) The program storage device of claim 27, wherein switching the plurality of USB root hub USB device assignments is dynamic.

29. (New) The circuit of claim 1, wherein the USB device balancing process balances USB bandwidth load predetermining USB devices allowable to share a same root hub and connecting allowable USB devices to available root hubs.